BEFORE THE NORTH DAKOTA DEPARTMENT OF HEALTH

PROPOSED DETERMINATION OF THE ADEQUACY OF THE NORTH DAKOTA STATE IMPLEMENTATION PLAN TO PREVENT SIGNIFICANT DETERIORATION

TRANSCRIPT OF

HEARING

VOLUME I

PAGES 1-199

Taken At
Brynhild Haugland Room
State Capitol
Bismarck, North Dakota
May 6, 7 & 8, 2002

BEFORE MR. DOUG BAHR AND MR. FRANCIS SCHWINDT
-- CO-HEARING OFFICERS --

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(The proceedings herein were had and made of record, commencing at 10:00 a.m., Monday, May 6, 2002, as follows:)

MR. BAHR: Good morning. My name is Doug Bahr and this is Francis Schwindt with me. It is 10 a.m. on May 6, 2002. We are in the Brynhild Haugland Room of the State Capitol in Bismarck, North Dakota. This is the time and place set to receive public input regarding the Health Department's proposed determination regarding the adequacy of the North Dakota state implementation plan to prevent significant deterioration, or PSD. The North Dakota Health Department has appointed Mr. Schwindt and I as co-hearing officers for this public hearing.

North Dakota has an EPA approved PSD program, which is found at 40 C.F.R. 52, 1820 to 1835. The purpose of this hearing is to receive comments on the Department's technical assessment and proposed determination indicating that there are no violations of applicable PSD increments for sulfur dioxide and that the current North Dakota state implementation plan is adequate to protect the applicable PSD increments and to prevent significant deterioration. In the Department's

Notice of Hearing, the Department also specifically solicited comments regarding the following information, analysis, and issues relevant to the Department's proposed determination:

In addition to the above assessment, the Department proposes to consider preliminary modeling analyses prepared previously by the Department since 1999 and/or U.S. EPA Region VIII, as well as ambient air quality monitoring data from the Class I areas since 1980.

The Department proposes to recognize Class I variances granted by the U.S. Department of Interior for North Dakota sources in assessing consumption of Class I PSD sulfur dioxide increment, and to count emissions from such sources only against the alternative increment established for such sources at CAA 165.

The Department proposes to utilize actual annual average sulfur dioxide emissions for all major and minor stationary sources for calculating PSD baseline concentrations and PSD increment consumption pursuant to North Dakota Administrative Code, Chapter 33-15-15.

The Department proposes to measure consumption of the PSD increment in Class I areas

based on the ambient concentration of sulfur dioxide caused by baseline sources, as compared to increment-consuming sources, pursuant to North Dakota Administrative Code, Chapter 33-15-15.

The Department proposes to establish baseline concentrations for sources in existence on the minor source baseline date using actual emissions, but proposes to adjust the baseline concentration for any source whose emissions in the two years prior to the baseline date do not represent normal source operation for that source.

Because the Department issued PSD and construction permits prior to the Fort Peck Indian Tribe redesignation of its tribal lands in Montana to Class I in 1984, the Department proposes to not retroactively apply Class I sulfur dioxide increments.

This hearing is held pursuant to Section 23-05-03, Subsections 1 and 9 of the North Dakota Century Code. It is an investigatory hearing, not an adjudicative proceeding under Chapter 28-32, the Administrative Agencies Practices Act. This means that individuals will not be put under oath, they do not have the right to cross-examination or other due process rights.

The comments provided today will be taped. There is also a court reporter that will be recording the comments. If possible, we do request individuals who provide testimony to provide two written copies of their testimony. The hearing officers may ask questions of witnesses to clarify issues. In an earlier letter, we stated we will allow hearing participants or attendees to submit written questions for the hearing officers' consideration. To improve efficiency and to save time, if agreeable to the presenters, we will permit participants and attendees to ask questions directly to presenters. The questions must be to seek clarification. A participant or attendee should not use questions to make statements or argue with the presenter. The hearing officers may discontinue questioning if the questions are deemed inappropriate or if it's deemed an inappropriate use of time.

We anticipate that this hearing will take a number of days. At the close of each day, we will announce the time that the hearing will begin the following day. Before closing the hearing, we will permit participants to provide rebuttal information to other testimony, if desired.

After the hearing is closed, the hearing officers will make recommended findings to Dr. Terry Dwelle, the State Health Officer. For this reason, we invite participants to provide recommended findings to the hearing officers. Any recommended findings should be submitted to the hearing officers no later than May 15th, 2002.

Mr. Schwindt will now outline the tentative schedule for today. We know that that may not be exact because testimony may take a little bit longer or shorter than anticipated, and at the end of each day we will also outline the tentative schedule for the following day.

MR. SCHWINDT: Thanks, Doug. What we're going to do this morning is start with the Department of Health to begin with. Terry O'Clair will lead off as the witness for the Department of Health. That may take until close to lunch, and we would take a break for lunch at that point in time and then we would ask Dick Long and Kevin Golden from EPA to present information on their modeling scenario. Then we will listen to some people from the Park Service and Fish and Wildlife Service and then John Dwyer from the Lignite Energy Council.

We are holding some time open for comment

from the general public towards the end of today. If there are some people that I have not talked to about scheduling time for hearing, please contact me during one of the breaks today and we can schedule you in. It does look like we will be here through Wednesday. That's based on the number of people that have indicated interest in participating and an estimated length of time that they will be making comments. So that's what we're looking at as of now. Certainly that will change as people make their presentations and may be shorter or longer than what they had originally envisioned. But if you have an interest in making comments and you're not on the list, please feel free to contact me and we will try to set up a schedule for you. If the schedules that we have worked out do not work for you, if you have some travel arrangements you need to do one way or another, please let me know and we'll try to accommodate that, as well.

Any questions so far? Seeing none, Terry, will you begin for the Department.

MR. O'CLAIR: This is going to be a slide presentation, so if you guys want to move over here.

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Good morning. For those of you who don't know me, my name is Terry O'Clair. I'm the air quality director for the State of North Dakota. I see a lot of familiar faces around here, but there's some folks I don't know. I guess, first of all, welcome to a beautiful spring day in North Dakota. For those of you who don't know, today is the opening day of softball season, as well.

The first order of business we need to take care of is to introduce some of the exhibits from the hearing docket, and Lyle just set those on the hearing officers' desk. We've got a list of 33 different items, and rather than sit here and read them, I'll just notify the hearing officer a copy of this has been included in the box of the list of documents.

Also coming from an environmental agency, I know that in our agency, as well as other agencies, we use a lot of acronyms, PSD, SIP, you name it, so what we have tried to do for the public is also put together a list of acronyms so that when we're going through our presentation, you have a better feeling for what that is. We've included that for the hearing officer and we've got extra copies for anyone who might want that, as well.

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Also, my presentation today will be a power point presentation, and we've made extra copies of the presentation, as well.

Maybe to start out, we could start out with a brief history. It all started with the Clean Air Act. The Clean Air Act was established by Congress, and one of the things it did was Congress recognized that clean air promotes a healthy environment. The Act requires all states to develop a plan that adequately protects the air quality. This plan is called the state implementation plan, and we refer to it as the SIP. Within the SIP it adopts the national ambient air quality standards and also adopts the PSD program for prevention of significant deterioration.

The state implementation plan includes rule development. The rule development incorporates federal provisions. There's also a portion of the plan that talks about a permit process. All sources of air pollution in the state have to go through our agency to get a permit before they can operate. First, before they can construct, then before they can operate you also have to get a permit from us. And the permit to

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operate includes restrictions on the amount of emissions that can be emitted.

Another tool that we use, has been incorporated in the state implementation plan is modeling. We use that to predict impact. We also have an inspection program. Our field inspectors are out in the field checking a variety of sources to ensure that they're complying with their permits. Many of the major sources have in-stack monitors, and our folks also go out there to make sure those monitors are reading properly. We also have [illegible] emission testing requirements in the [illegible] and we also operate an ambient air quality monitoring network. Different from the continuous emission monitors on the stack, the ambient network has stations set up throughout the state to continuously record the levels of pollution throughout North Dakota.

One thing about the SIP process, the plan is dynamic. We have to update this routinely. I noted that rule development is one of the primary things included in the SIP, and the rule development process starts out by us going before the Air Pollution Advisory Council. When we want to change our rules, that's the first group we go

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to to get recommendations by them. Once we get past the Air Pollution Advisory Council, we go to the State Health Council for its consideration. We ask the State Health Council to allow us to proceed to public hearing, and that's the next step in the process, where we get input from the public and the sources that are affected. Once we take the input, there may be some changes that we make to the rules, then we go back to the Air Pollution Advisory Council again for their review. The State Health Council also gives final approval on the rules that are being adopted. And then the governor submits the state implementation plan to EPA and EPA reviews it for approval. So it's a long and tedious process sometimes. Typically this process lasts nine months to over a year.

The purpose of today's hearing is to answer the question, does the state implementation plan adequately protect the air quality resources of the state? Specific focus will be given on the implementation and administration for the prevention of significant deterioration rules.

I would like to talk a little bit about just what PSD is. First, you need to recognize that ambient air quality standards have been set to

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protect the health of the citizens. PSD is different, however. PSD examines the air quality in the clean areas of the state and the program has been set up to allow those areas not to show any significant deterioration. EPA introduced PSD by rule in 1974, and Congress amended the Clean Air Act in 1977 to adopt it.

PSD establishes three different areas: Class I, Class II, Class III, with Class I being the most clean, most pristine area. Class I areas include the national parks and the wilderness areas.

It was Congress's intent that each state carry out PSD programs in accordance with the state needs. EPA approves the SIP -- can approve the SIP or it can delegate even full or partial authority. In North Dakota the PSD program was adopted in 1976, and it was approved through the SIP process by EPA in 1977.

This is a depiction of where the Class I areas are at in North Dakota. Way up to the north part we have the Lostwood National Wilderness Area. There's actually three different areas of the Theodore Roosevelt National Park, the North Unit, the South Unit and the place where Teddy

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Roosevelt spent most of his time in the Elkhorn Ranch. Also included on this slide are some of the Class I areas in eastern Montana.

PSD concepts. First of all, what PSD looked at was establishing a baseline. Baseline was determined by emissions from existing sources at the time of the baseline date. In North Dakota the baseline date is December 19th, 1977. It also establishes permissible deterioration levels at incremental amounts above baseline concentration. PSD requires all new sources to install best available control technology. And the program is reviewed on a routine basis.

To give you a concept of what baseline concentrations are, first of all, the ambient air quality standard, I want to make sure there's no confusion on this point. The ambient air quality standard to protect health and welfare set 365 micrograms. The baseline concentrations, these are examples of some of the baseline sources that were in existence prior to the baseline date. They contribute -- the modeling shows that they contribute in a range of 16 -- or 6 to 22 micrograms per cubic meter depending on which class area you're looking at. One of the things I want

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to point out again, this is far below the ambient standard.

Then you need to look at increment consumers, sources that were built after that date consume increment. The most stringent PSD rule for North Dakota is the 24-hour standard, so most of my emphasis this morning will be on that rule. The 24-hour incremental level is 5 micrograms above baseline concentrations. Some examples of increment consumers in the state are the Great River Energy Coal Creek Station, the Coyote Station, AVS 1 and 2, the Grasslands Gas Plant, and the GRE Stanton.

There can also be air quality deterioration offsets when some of the older units shut down. For example, Neal Station, Royal Oak Briquette in Dickinson, the MDU Beulah Station that was shut down, the Flying J Refinery in Williston. The Amerada Hess has reduced emissions and the Lignite gas processing plant has also reduced emissions. We also need to take a look at oil and gas wells. Some of those wells were flaring during the baseline period and since been tied into gas processing plants.

There was also a provision in the PSD

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rules that allow for waivers. One of the things we ran into in the mid '80s is that we -- using the modeling that we were using at that time, the values that were input into the model looked at allowable emission rates which were the maximum emission rates, and using those rates it was determined through modeling that all the increment was used up. In that event, there was a provision that sources that cannot meet the 5 micrograms can go before the Federal Land Manager and make a case to allow them to build as long as the Federal Land Manager will certify that there's no adverse impact.

In reviewing that application the Federal Land Manager then looks at the air quality related values that are specific to that Class I area. They consider things like what is the impact on visibility, soils, vegetation, and deposition. Those sources that were seeking a waiver then went before a public hearing, and EPA also reviewed the applications at that time in the process. The Federal Land Manager and EPA all agreed at that time that there would be no adverse impact and the State could go ahead and issue permits, and that was done for a number of sources.

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In 1982 waivers were granted to the Antelope Valley 3 Station, Little Knife, Nokota, Minnesota Power & Light, and the Whitetail Gas Processing Plant. In 1984, a waiver was sought and granted for the Williston Basin Gas Plant. And in 1985, AVS 3 and Nokota had not been built yet at that time and they asked for a waiver and that waiver was extended. The most recent waiver came in 1993 with the Dakota Gasification facility.

One of the things that was looked at by the Federal Land Manager was, once again, they identified that there was no adverse impact up to a level both in 1982 and 1993 that allowed to exceed the 5 micrograms up to a point of 12.7 micrograms per cubic meter.

EPA's current modeling indicates that -- once again, the past FLM certifications were granted up to a point of 12.7. In this case it was the Theodore Roosevelt National Park North Unit. EPA's recent modeling shows that taking the facilities into consideration right now that are operating, their modeling shows the value of 12.3. My point here is that the Federal Land Manager granted waivers up to the point of 12.7, indicating there was no adverse impact. EPA's recent modeling

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shows 12.3. So the question remains, are those air quality values being impacted at this time?

Air quality management tools. We use a number of things to track air quality management in the state. Emission inventory. We also -- I spoke earlier about ambient monitoring throughout the state. We also use -- dispersion modeling is one of the tools to predict what the concentrations will be. And, once again, all of this is subject to periodic review.

This is a chart that shows the total SO2 emissions in the State of North Dakota. A lot can be seen on this chart. Let's start with the utility boilers. Starting in 1980, I think you can see a gradual rise in the amount of SO2 emissions from all the power plants in the state until you got to the year 2000. The year 2000 is when the acid rain provisions kicked in and there was quite a drastic drop in the SO2 emissions at that time. Also over the same time line, the oilfields started operating, and they probably peaked in 1982. One of the things I draw your attention to that for is the next slide will show that that is also where we saw the peak SO2 concentrations in the North Unit of the park. At that time many of the oil wells

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that were flaring were not tied in. Many gas plants were coming in at that time, and once those oil wells got tied into the gas plants, you saw a decline in SO2 emissions. The SO2 emissions that we have in 2001, the total, the top line here, the red line is the total, is about equivalent to what the SO2 emissions were in 1982.

This is the monitoring data from the North Unit of the Theodore Roosevelt National Park over the years starting from 1980 through the year 2001. The monitor was shut down in '99 and 2000. That's why there's a gap in the data here. Once again, the baseline date was December 19th, 1977. And although we collected monitoring during this period, it was based on bubbler data, and the monitoring prior to 1980 we don't think is that reliable, so that was not included on here. It would have been great if we would have had acceptable monitoring data. I think that could have answered a lot of the questions that we're meeting here for today.

This is just a slide that shows where some of the monitor sites are located. We have several in the eastern part of the state, but the majority of the monitoring stations are in coal country, and

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we recently added some along the border, as well.

Legal issues. Some of the legal issues that we looked at included what are the relevant emission rates, both during the baseline and for the current period? How is baseline concentration established? What is allowable deterioration level? How are increment contributions determined? And what is the impact of the waivers that were granted?

The statutes and the rules established many of the things that the previous slide just looked at. The statutes established what the emission rates should be. They also established how to determine baseline ambient concentration. It also depicts how to measure deterioration using ambient concentration and how emissions from the waivered sources are to be treated.

What emission rates should be used? The rules, North Dakota Administrative Code 33-15-15, et cetera, require the Department to use actual emissions for each source when the data is available. These rules define actual emissions as the rate of emissions in tons per year.

How to determine baseline concentration? Once again, the regulations require that the

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baseline concentration be based on actual emissions during the baseline period. However, if this period is not representative of normal source operations for that particular source, the Department has the discretion to pick another period that is representative of normal source operation.

How is deterioration measured? Congress defined baseline concentration as the ambient concentration levels which exist at the time of the first application for a permit. Once again, that would be the baseline date for North Dakota is December 19, 1977. [illegible] rules in effect both before and after Congress passed the law also includes ambient.

Modeling only increment-consuming emissions does not allow the checks and balances Congress intended through a comparison of monitored ambient concentrations with modeled ambient concentrations. The Department is proposing the use of the maximum allowable ambient level as a means of implementing Congress's intent.

How emissions from waivered sources are to be treated? The Act also addresses this. It states that waivered sources consume alternative

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increment under the alternate Class I standards established by Congress. Therefore, the Department did not include such sources when calculating whether the increment was exceeded for at least two sources that we looked at, DGC and Little Knife.

Looking back at the historical waivers. Once again, the Clean Air Act does allow for waivers. The Federal Land Manager reviewed the application for those waivers and determined that there was no adverse impact in the air quality related values. EPA also reviewed that without any objection at that time. So the waivers for two sources that exist today include the Dakota Gasification facility and the Little Knife Gas Processing Plant. Such sources must comply with the alternative increment. Once again, in the North Dakota Administrative Code it's defined, as well. It's also included in the Clean Air Act, it's defined.

The relevant emission rate. North Dakota Administrative Code requires actual emission rate. Actual emissions is defined as average rate in tons per year at which the source actually emitted. It also requires two years of data prior to a particular date that are representative of normal

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operations. However, normal operations must be determined.

As far as baseline concentration, Congress reasoned that baseline concentration would be determined using monitoring data. Unfortunately, the early monitoring data, 1974 through '79 when the baseline period was, was not very reliable. Thus, we had to use modeling as the tool of choice. The rule indicates, once again, that actual emissions are to be used.

The application of increment. The Class I, once again, the 24-hour standard is the most critical in North Dakota. The Class I increment is set at 5 micrograms per cubic meter. Congress required the use of ambient concentration for baseline in the Clean Air Act, Section 169. One exceedence is allowed, so we have to determine what the second highest concentration for the year is, then we add 5 micrograms, and that establishes what the maximum ambient level is.

As far as increment consumption, it's a three-step process. Step 1, model all baseline emissions. The maximum ambient level -- allowable level is set at 5 micrograms above the second highest receptor average, and that's looked at for

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each meteorological year, 1990-1994, and for each Class I area.

In step 2, all current emission inventory is modeled, including both baseline sources and sources that were built after baseline. And for the Department what we used was the year 2000 and 2001 data. Once again, we looked at each year of 1990 through 1994 and we also looked at each Class I area.

And step 3, it's merely a comparison of the results in step 2 to the MAAL that was established in step 1.

This is a -- I think I got the slides backwards here. I think there was supposed to be another one that actually established how the MAAL -- that one disappeared. Let me go back. There it is. This is a depiction of how the MAAL is established. What we did here is the example shows we used meteorological year 1990 and for -- we used the South Unit of the park. For every day of the year we modeled the baseline emission rates to determine what the impact was. As you can see, as the winds change, as emissions go up and down, you would expect the concentrations to change at the park, and that's what happened. We then looked at

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what the second highest was for the year and we set that at that level, and that's where we added the 5 micrograms onto that to establish what the MAAL was.

Then the next step is to model all the current inventory and compare that to the MAAL. Once again, it shows 1990 in the South Unit of the park, the highest and the second highest are almost dead even, but assuming that this was the second highest and compare that to the MAAL, then it shows that it's less than the MAAL; therefore, there's no exceedences.

[illegible] selection of Calpuff modeling system. First of all, we believe that Calpuff is state of the art for PSD Class I analysis involving long-range transport. It's proposed for inclusion in the EPA Guideline on Air Quality Models in Appendix W. It also has been widely applied by states, EPA, and the National Park Service for PSD Class I analysis across the nation.

The basic inputs for air quality modeling include first the source data. Source data includes the emission rate, stack height, gas exit temperature and velocity. The other input would be the meteorological data. Once again, we use 1990

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through 1994. The data was obtained from the National Weather Service and includes things like wind speed, wind direction, temperature, and precipitation data. Another input to the model is establishing the receptor grid. The receptor grid identifies points at which you want to identify what the concentrations are at those points. These are an example of the receptor points. These are all four of the Class I areas in the state, and this is where our receptor grid has been set. There's been some discussion as to the appropriateness of where the receptor points should be located. They should be in equal areas, for example, and that's one of the things the Department continues to look at.

Highlights of the Department analysis. First, it's based on the actual annual average SO2 emission rates in pounds per operating hour. Secondly, once again, we used five years meteorological data, 1990 through 1994. The model technical settings were based on the Department's performance evaluation. We also used receptor grid network averaging. And the baseline emission inventory that went in as inputs for the current inventory was the year 2000, 2001, and the baseline

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inventory modeled separately. The maximum allowable ambient level approach is what the Department used to determine the Class I increment compliance.

Many areas of the model that we did and the model EPA did are the same. I would like to highlight those.

One thing, we both used the Calpuff version 5.4 model. The grid size location, you know, EPA's is equivalent with ours, ours is equivalent with the EPA's. We both used the same meteorological data. The technical settings are virtually identical, as well as the receptor locations.

Some of the things that we did differently. EPA used 1999 and 2000 data. The Department used 2000, 2001 data. Once again, we think that's critical because ours takes into consideration the acid rain provisions that kicked in in the year 2000. EPA used a 90th percentile approach where the Department used the actual average over the number of operating hours. EPA's approach did not consider oil and gas. Ours did take that into consideration. The Department recognized the Class I variances that had been

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granted to both DGC and Little Knife, so we took that into our consideration; EPA did not. EPA did not use receptor averaging; the State did. As far as output interpretation, EPA's interpretation included an increment only, and for the Department ours looked at the MAAL approach, the maximum ambient allowable level approach.

I would like to go through just a few of the results of the Department's analysis. Once again, although I have the 3-hour averages up here, the most crucial one for North Dakota is the 24-hour average. In the South Unit I have highlighted there was one exceedence. Once again, you need to recognize that it's not a violation if there's only one because you're allowed -- you take a look at the highest second one.

In the North Unit, our analysis shows that there were no exceedences. As far as the Elkhorn Ranch, once again, no exceedences for all five years. In the Lostwood National Wilderness Area there was one exceedence that occurred. Once again, it didn't come up because you throw out the highest.

Our preliminary conclusions regarding our modeling results indicates as far as the State's

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analysis there are no violations. As far as EPA's analysis, it's our contention that the levels that they show where there were violations were similar to the levels that were granted at the time of the waiver, and, once again, if the air quality related values did not impact at that date, we're uncertain as to why that should be considered today.

Also, the monitoring data that we've collected over the years since 1982 shows a considerable improvement in air quality in North Dakota. It's our contention that the state implementation plan that was developed does indeed adequately protect the air quality in the state.

We're not done yet. We're still looking at other modeling considerations in the future. Some of the things that we would like to take a look at are the design of the receptor network. We would like to take a look at the methodology behind receptor network averaging. We would also like to take a look at expanding the use of actual hour-by-hour continuous emission data. Many of the sources out there have continuous emission monitors on their stacks, and we think that would be a good way to look at it. Coupled -- taking that data and coupled with concurrent meteorology, I think you

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would have a best case scenario as to what the modeling shows. We also need to refine our emission inventory. We need to look at all the sources that were input into the model to make sure that we're using the accurate data that goes into the model.

As far as future decisions and issues, this hearing notice solicited comments in a number of areas. First, we asked for your comments on model application. We asked how should the Class I waivers be treated. We asked about the use of actual average emission rates. We also are seeking input on the maximum ambient allowable level approach. And also we're open to suggestions on what normal operations are. We also would seek input on what the redesignation of the Fort Peck area, what type of an impact should that have on sources that were built prior to that date.

One of the things we're also looking at is adjusting permits for the major sources. And we're looking at putting annual caps on them. One of the criticisms that we have had from EPA is that using our data, the 2000, 2001 data, although it's current data, there's nothing there to require that the source can't go above that. And it's our

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contention that because the acid rain kicked in, we don't expect them to go, but we recognize EPA's concern and our response to that is looking at annual SO2 emission levels.

We would also like to consider additional ambient monitors throughout the state. I think the real credibility is in the actual data that's out there. We do have some monitors. Those monitors have showed decreasing SO2 emissions. I recognize that those monitoring stations are costly. If we could have more of them, I think we would have a better idea of just the concentrations that are out there.

One other thing that I would like to add before I close this morning is that as the air quality director for the state, actually even before that, as a farm boy growing up in North Dakota, I am very impressed by the clean environment that we have here. North Dakota is one of the 14 states in the nation that are meeting all ambient air quality standards, both federal and state. The American Lung Association just released a report last week that did a report card on how the states are doing. Specifically this report card was for ozone. And although many of the

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states received failing grades, North Dakota got all A's.

Bill Rukelshaus, the first administrator of EPA, once said that the clean air laws of this nation come about because the people of Denver wanted to see the mountains, the people of Los Angeles wanted to see each other. I think in North Dakota we're very fortunate. That doesn't mean we can't do better, however. Our challenge is -- we already have clean air, and our challenge is to keep it that way. In doing so we have initiated discussions with the National Park Service. We're looking at including efforts to establish visibility monitoring at the South Unit in addition to monitoring for pollutant sulfur dioxide and nitrogen oxides.

Clean air is not the only valuable resource we have in North Dakota. Another one of our valuable resources is some of the staff at the Health Department that are very dedicated. Guys like Steve Weber and Rob White have spent many long hours preparing the meteorological data, doing performance evaluations, you know, looked at the oil and gas data over and over, and also doing the actual performance or the conducting of the actual

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modeling. Guys like Tom Bachman, who spent many hours reviewing emission factors, emission tests, operating hours to determine just what normal operations were. Guys like Dan Harman, who head up our ambient monitoring program. Those are the guys that are out there ensuring that the monitors across the state keep running, not only do they keep running, but they make sure that they're doing the proper quality performance checks to determine the accuracy of the data. Guys like Lyle Witham who spent many weeknights and weekends looking at all legal issues that we're facing in regard to the PSD question. And he looked at things all the way from the intent of Congress to the Alabama Power decision. Then we have guys like Martin Schock who is looking over our shoulders throughout the whole process critiquing us every step of the way and challenging us to make sure that the waiver are supported by sound science. All of these staff are very dedicated.

I think we can sincerely state on behalf of the Health Department that we have developed the North Dakota state implementation plan that does indeed adequately protect the air quality resources in this state.

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The purpose of our hearing today is not just a presentation that we want to make. We're also here to receive your input. If you have ideas that are out there how we can improve things, we're willing to listen. And with that, I thank you for your attention.

MR. SCHWINDT: Thank you.

MR. BAHR: Mr. O'Clair, I have a couple questions that maybe you can help me with. On your slide entitled "How to determine baseline concentration?" you said if the period does not represent the normal source operation for that particular source, then a new representative period is decided. How do you determine whether that period is the normal source operation and how do you determine what period to choose as the new one?

MR. O'CLAIR: The PSD rules talk about the two-year period, you know, prior to the baseline date as the default value for looking at what normal operations were. A number of the plants were just coming on line at that time and so I don't think they were up to their full peak load, for example. So the PSD rules does recognize that and it allows us to look at, you know, data beyond

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that point to see if we can determine just what normal operations were. For example, the coal analysis, the sulfur in the coal, I think that's one of the key issues that we have to look at, just how hard were the plants running. So it's not just the two-year period prior to this update. You have to also look at other periods, as well.

MR. BAHR: But how do you determine what becomes -- say, do you look at ten years afterwards and take an average, or do you just look at every two years and determine this seems to be pretty standard?

MR. O'CLAIR: There's no clear guidance on that in the rule. We did, you know, look at a number of years. Eventually I think the sources, you know, come to a peak and average out beyond that. That's some of the data that we're looking at.

MR. BAHR: You mentioned that the early monitoring data from '74 to '79 was not reliable. Do you know if that's generally acceptable? Does EPA and others agree with that, to your knowledge?

MR. O'CLAIR: EPA had included that data in their database, as well, and that data has all been -- to my understanding, has all been deleted

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from the database because of that.

MR. BAHR: And did the information from those years differ substantially from 1980 and on?

MR. O'CLAIR: Once again, you know, I hate to compare data that we consider, you know, unreliable because there was some -- although the data was being collected at that time, there was some things that came up later that questioned the validity of that data. For example, the bubbler technology, it was later learned that you should have been refrigerating those to keep them accurate. That was not always done. So I would be leery to substitute, you know, bad data for no data at all.

MR. SCHWINDT: Do we even have any of that data anymore?

MR. O'CLAIR: We have a very limited amount. We found a pamphlet from 1980 that does talk about some of that data. But, once again, I wouldn't bet the farm on the credibility of that data.

MR. BAHR: As far as you know, EPA agrees that that data should not be considered?

MR. O'CLAIR: Yes.

MR. SCHWINDT: Does anybody in the

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audience have any questions for Terry? No. Thank you, Terry. Is that all from the Department?

MR. WITHAM: I guess I would like to answer or add a couple points from the legal perspective to answer the hearing officer's question in terms of normal source operation. There is a document in the docket that's dated, I think, November -- or February 2nd, 2002, and it shows the proposed method that the Department used in the modeling for establishing the baseline concentration.

This, however, is only a proposal. The actual implementation of normal source operation is a factual question that if there isn't an agreement with the source, it would probably need to be determined at some sort of hearing under 28-32 rather than this type of hearing. But there is a proposal in the record, a rather lengthy one, explaining what the Department did and how they came up with the numbers used in the model.

In terms of the bubbler data, itself, there were tests conducted at the time that was done that showed that they couldn't replicate the results from one test to the other. In other words, scientifically, it wasn't -- it couldn't be

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validated or replicated, which is the test under the scientific method. So if you can't replicate your results, then you shouldn't use the data. And that is the reason that both the Department and EPA -- in the lengthy legal memorandum I cite the provisions from the '80 preamble that discusses the bubbler data, and EPA also agreed at that time that that the bubbler data was unreliable and couldn't be used.

I have also prepared supplemental comments, Exhibit 32, in the record, adding some factual discussion of some different documents submitted by the Department. It's rather dry and lengthy. I don't think it would serve any purpose to read that into the record. That has been presented to you. And if you would have any questions on that, I will be available after you've had a chance to review that. At some point later in the hearing if you would like to ask me questions about that, I will be here to answer them.

MR. BAHR: Mr. Witham, do you have copies of that so that other attendees can read that, also?

MR. WITHAM: Yes, I've got those copies

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here and I will hand them around to anybody that's interested. I think that's it.

MR. SCHWINDT: Anything else from the Department, Terry?

MR. O'CLAIR: (Shakes head.)

MR. SCHWINDT: Then we'll move on to have EPA present information on their modeling effort. Dick and Kevin.

MR. O'CLAIR: If we could take a short break, they need the overhead. I'll get my stuff out of the way.

MR. SCHWINDT: Okay. We'll take a five-minute break.

(Recess taken.)

MR. SCHWINDT: Go ahead, Dick.

MR. LONG: Thank you. My name is Richard Long, and I'm the director of the air and radiation program for EPA Region 8. EPA's presentation is going to be divided into two parts. I will give the formal testimony at the hearing in a few minutes, but, first, we thought it would be good to explain some of EPA's PSD Class I modeling study.

With me here today is Kevin Golden, who is our regional modeler. Kevin is a national expert in modeling with a number of years of experience

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with modeling activities within EPA, and he has reviewed many modeling activities from probably sources in this room, as well as in other regions and nationally. He is recognized as an expert within EPA. So I just introduce Kevin Golden.

MR. GOLDEN: Thank you, Dick. Turn on the projector there. I just wanted to give an overview of the analysis that we did and completed in January. Essentially we used the current regulatory version of Calpuff. We adopted the same minor revisions to the code that North Dakota did in the processing of the upper air meteorology data. We used version 5.4 of Calpuff, which is the version that's currently on our website.

The modeling inputs we selected were not the absolute worst case. For example, traditionally we would use what are called the IWAQM defaults. That's the Interagency Workgroup on Air Quality Modeling. This workgroup consists of the Park Service, the Fish and Wildlife Service, EPA, and one other group. But we put out guidance as to what model settings should be used in the model. And we didn't use those. We used the options that North Dakota selected based on their performance evaluation.

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We also didn't use the maximum emissions in the model. Traditionally if you go and look at the data, the highest 24-hour average actual emission from the sources. We instead collected the 90 percentile, and I will talk about how that worked in a minute here on another slide. The overall modeling approach that we did is consistent with the EPA guidance and regulations for Class I area analysis.

In our increment consumption methodology, we manually calculate the difference between the baseline emissions. In this case it's 1976-1977 period and the current year emissions, which at the time we did this analysis 1999 and 2000 were the two most recent years available.

The new sources, meaning anything that came on line after 1977, they're modeled at the current emission rate, and sources that were in operation before 1977, what I call the old sources, were modeled at the net change emissions between the baseline and the current year emissions.

The way it works is that emission increases since 1977 consume increment, and decreases since 1977 actually expand the increment. There's a post-processor in the Calpuff

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model called Calsub where you actually subtract the increment expansion sources from the total concentration. So the way EPA does the increment analysis is that only the net change in emissions from the baseline date is modeled.

And here's an illustration of how it works. The increment concentration which we modeled, it varies. Again, we're only modeling the net change in increment concentration. And every day you can see based on meteorology changes and emissions the concentration changes. The PSD Class I increment for SO2 is 5 micrograms. You can see that on the red line there. In this example there was -- you count the dots above the red line, there was eight days over the 5 microgram Class I increment, so, therefore, there would have been seven violation days for this specific year, and this was the meteorology data from 1990. You would have run this same emission scenario through five years of meteorology, and this happened to be one of the years that I pulled up and put on the slide.

The next slide, Dick. In the modeling analysis we used many of the same data that the State did in their 1999 analysis and in their

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current analysis that they completed just in April. We used the 1990 to 1994 meteorology. We used the 640 by 460 kilometer modeling domain. That's the same as the State.

We provisionally used North Dakota's model settings based on their limited model testing. The default settings can be changed if -- these IWAQM, Interagency Workgroup on Air Quality Modeling, recommended settings can be changed if there's local data that justifies it. I guess our thought on that was there was only one site to really test the model, and it's, I guess, debatable whether or not those -- using an alternative, there was enough data to justify using alternative settings so in our report we ask for public comment on that whole issue. But provisionally in the modeling that we did, yes, we accepted the State's changes to these IWAQM settings.

We used 49 receptor locations roughly at five-kilometer spacing around the perimeter of the Class I areas. It would have been better, I suppose, if we would have had the entire modeling maybe at two-kilometer spacing. The reason we didn't tighten that up when we did the analysis was that there was the issue of run time. I mean, this

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is a heck of a lot of data and a lot of sources that we're processing through the model. If you would have had more receptors, it would have added onto the run time. So we didn't have the resources to have this model running for weeks. So, anyway, provisionally we just used the five-kilometer spacing.

The next slide.

Again, at the time of our analysis, the 2001 continuous emission monitoring data wasn't available for the entire year of 2001, so the most recent two years was the 1999 and 2000 data and that's what we used. The current year emissions were based on the 90th percentile of the 24-hour average continuous emission monitoring data. How that works is we process the hourly emissions data from all the sources into daily 24-hour averages. We had 730 days over two years, and so the 90th percentile if you ranked all those 730 days, we selected the 73rd highest day and that was the emission rate for that source that went into the model.

The base year annual emissions, again, the 1976 and '77 time period, there was no CEM data in existence in that time period so we had to manually

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calculate the emissions based on the activity data of the specific sources, so we had coal use data, we had coal sulfur data, and so forth. From that we calculated the annual emission rate.

But that only gives you an annual average, and what you need to put into the model is a 24-hour average, so how we got that was we developed a factor from the current continuous emission monitoring data to estimate the base year 24-hour average. Essentially what we did is we looked at the current year's peak-to-mean ratio and looked at the ratio between the 24-hour average emission and the annual average and came up with a factor and applied that same factor back to 1977 to come up with a 24-hour average emission rate. The key here is you have to have -- you know, it's sort of an apples to apples comparison. If you use a 24-hour average in the base year, you have to have a 24-hour average in the current year, so that's how we did that.

The Coal Creek emissions were based on 2000 CEM data only, and that reflects what we hope are permanent emission reductions from that source. They've eliminated much of the bypass around their scrubber that they had and that

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resulted in significant emission reductions in 2000.

We didn't consider oil and gas emissions in our draft study. In the original 1999 State study they had actual increment consumption from the oil and gas. We understood that the State was doing a more comprehensive review of the emissions from the oil and gas sources and so we deferred putting that into our model until we got better information from the State. And we understand that the State has done that in their current study.

The increment-expanding sources we put in the model were the same as in North Dakota's 1999 study, and I understand that in the current April 2002 study, those emissions are essentially the same.

We developed separate base year inventories for 1977 to 1978 to reflect the different baseline date in Montana Class I areas. The baseline date in Montana is a year later than here in western North Dakota, so you need to use a different inventory to figure out the impact in Montana, Montana Class I areas.

Our modeling results showed increment violations of the Class I 24-hour PSD increment in

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all four of the Class I areas. The Teddy Roosevelt National Park South Unit, they had the highest concentration of 12.8 micrograms and there was nine violations of the increment. And Medicine Lake of the four had the lowest impact with a concentration of 5.9 and two violations. Again, the 5 micrograms is the increment. And the results overall were very similar to North Dakota's original 1999 study.

We also performed a simulation using the unmodified code, used the pure version 5.4 Calpuff off the EPA website and the Interagency Workgroup on Air Quality Modeling settings. And results showed that the concentrations actually were about 50 percent higher. Instead of 12.8, I think we saw 18 point something as the second high concentration. And it was up to 16 days in violation of the PSD increment.

We also did some testing of the different -- individually of the different model settings. In most sensitivity tests you rerun the model and you just change that one factor and you see what the effect is on the overall results. And testing all of the individual IWAQM settings, virtually all of them would have resulted in an incremental

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change of slightly higher concentration. We found very few of the settings that would have resulted in a lower prediction for the model than the ones we found.

And that was all I had, unless there's any questions.

UNIDENTIFIED PERSON: Do you have copies of your overheads?

MR. GOLDEN: I don't have them with me. We can make copies from the slides and make those available before the end of the hearing if you wish.

MR. BAHR: The baseline is from '76 to '77. How is that determined if there wasn't reliable ways of measuring back then?

MR. GOLDEN: The baseline date is based on the date of the first complete PSD application, I believe, and it extends for a period -- I think it was December 19th, 1977, was the baseline date. And the baseline period is the period two years before that.

MR. BAHR: My question is, at least we've heard earlier that the ways of measuring in the late '70s isn't reliable and it's generally agreed that it's not reliable. So are those the same

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things that were used to measure the baseline in '76 and '77?
MR. GOLDEN: Yeah. We don't think you -- the baseline isn't established based on monitoring. I mean, PSD, the way I do it, it's almost like you want to take a snapshot of conditions that exist in 1977 and you want to take a look at the change in air quality that would have occurred since 1977, and so the way EPA does that is we look at the net change in emissions that have occurred since the baseline date. We monitor that change and that is the amount of air quality deterioration that's happened since that date.
MR. BAHR: My question is, is that snapshot accurate, or was the method used to take that snapshot not reliable?
MR. GOLDEN: Well, we don't think there's a -- we don't think there's -- we think the best way to establish the amount of deterioration that's happened is to look at the net change in emissions since 1977 and that's what you model. We agree with the statement that was made earlier that the monitoring data pre-1980 was based on bubbler data. That data is very temperature sensitive. In monitoring at remote locations from that period of

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time, I mean, that data is clearly not very reliable compared to the monitoring systems that we have today.
MR. BAHR: Can you outline in summary form the main differences between your modeling and the Department's?
MR. GOLDEN: I think Dick's testimony will cover that.
MR. BAHR: Do you have that testimony in writing, also? Thank you.
MR. SCHWINDT: Kevin, what was the basis for the use of the 90th percentile value? How did you arrive at that figure?
MR. GOLDEN: Traditionally the guidance is that you model using -- in this case you modeled with the maximum 24-hour average emission rate. You know, if you have a new source coming in that has one stack, one source, you know, you're trying to figure out what the maximum impact is, yes, it's reasonable to use that emission rate. If you've got seven or ten major sources operating all at the same time, it seems unreasonable that they would all be operating at the maximum emission rate at the same time.
MR. SCHWINDT: Right.

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MR. GOLDEN: And so what we did is we looked at, okay, if you look at all sources operating together, what's the reasonable worst case or the maximum cumulative emission rate for all of those sources? And it turns out that if you picked the 90th percentile of the individual emission rate of the individual sources and you put those individual numbers all in the model, it turns out that the cumulative emission rate of all the sources was equal on a few occasions to the 90th percentile of the individual sources, so it actually happened where the emission rate that we put in the model for all those sources was something that actually happened, so that's why we selected the 90th percentile. That is an issue that's open for public comment, part of the comments in our report, and so, you know, we're welcoming comments on how we did that.
MR. SCHWINDT: The Appendix W guidelines indicate in there that if the maximum values are used, that that's going to be overpredicting the number of exceedences in any particular area, so the 90th percentile was an attempt to try to get that more realistic?
MR. GOLDEN: Yes. Yeah, that's right.

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MR. SCHWINDT: Okay. Then what would be the difference between assuming the 90th percentile versus the 85th percentile versus the 50th percentile, any other value that would be considered?
MR. GOLDEN: I think the floor would be if it actually happened. I mean, remember, the increment is not to be exceeded more than once a year. It's a rare event. One day or two days, the second highest day in 365 days is a rare event. So you don't want to put something in a model that's sort of like an average emission rate because you would have this problem where, gee, it only takes two days a year to pull the increment. And so, on the other hand, if you had a thousand sources, it would be completely unreasonable to think that all of them would be operating at the maximum rate at the same time. So I think we picked sort of a realistic worst case, and that's why we picked the 90th percentile. I wouldn't pick a number any lower than that because clearly if it happened more than once over a two-year period, it's very highly likely that it's going to happen again in the future. So it seems 90th percentile in this case would be the floor. I mean, you wouldn't want to

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go lower than that.
MR. SCHWINDT: Then what is the status of including the Calpuff model in your EPA guidelines? I know you have been trying to do that for the last several years, and as far as I know, that hasn't happened as of yet.
MR. GOLDEN: It hasn't happened as of yet. Actually in the current guides EPA – there is no guideline, quote/unquote, model for modeling long-range transport, which is the sources -- the receptors beyond 50 kilometers from the source. EPA --
MR. SCHWINDT: Excuse me. Beyond how far?
MR. GOLDEN: Beyond 50 kilometers.
MR. SCHWINDT: 50 kilometers.
MR. GOLDEN: All of those Class I areas are beyond 50 kilometers from the sources here, the major sources here. EPA proposed Calpuff -- upgrade Calpuff as a guideline model, but EPA recommends at the current time Calpuff for this long-range transport, and in fact it's been used for hundreds of sources in PSD applications over the past five years. In this upgrade, this Federal Register we're proposing -- we're bringing to the

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guideline on air quality models that has been proposed, but hasn't become final at this current time. We do expect over the next, you know, six months or so that it will be promulgated final as an official guideline model.
MR. SCHWINDT: Are there any questions from the audience?
MR. WITHAM: Your Honor, I'm not clear on the procedure for asking questions, but I would like Kevin's comment on -- I don't know if it's fair to ask him at this point or if he would want to look at the data first. But Exhibit 33 in the record looked at the cumulative CEMs data that was available concurrently on an hour-by-hour basis and compared that to the 90th percentile 24-hour emission rate that you used in your model, and it showed that the actual concurrent emissions rate exceeded the number you modeled only 1.46 percent of the time. Any comments you would have on that?
MR. GOLDEN: Yeah. The -- again, the increment is not to be exceeded more than once a year. Two days, the second high day out of 365 is less than 1 percent. Again, the increment is extreme. If you look at the number of days in a year, the increment is only two days out of 365.

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That's less than 1 percent. The other thing is that we're not trying to predict, I guess, historically, you know, whether the increment has been exceeded. We're trying to look ahead to the future and say whether or not the increment could be threatened in the future. And so it's very conceivable that you could have an emissions scenario in the future that's worse than what you see in two years. It's sort of like weather, I guess. You know, we haven't had any blizzards in Denver in the past five years. Does that mean a blizzard is never going to happen again in the future? No. I think we've had years in the past where we've had five blizzards in a single year. So, I mean, you have to sort of characterize your emissions input into something that's feasible that could happen in the future, but, again, the probabilities are that even though it only happened 1 percent in a given year, the fact it happened, it's probably going to happen again in the future.
MR. WITHAM: A second question would be just any basic comments you would have on the net averaging approach, unless Dick was going to address that.
MR. GOLDEN: Yeah, I think Dick has

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comments on that.
MR. SCHWINDT: Jim Mennell.
MR. MENNELL: Has EPA ever used the 90th percentile approach in permitting any new sources anywhere in the country?
MR. GOLDEN: Not that I'm aware of. Again, for a new source, but it's only a single source, I think it's completely supportable to use the maximum allowable emission rate. You know, traditionally for new source you always put in the allowable emission rate for that source. If they weren't going to emit at that rate in the future, then they probably need a lower permit limit.
MR. SCHWINDT: Any other questions? Okay. Dick.
MR. LONG: Thank you. I would like to preface my comments by my health has been better before and if I ask for a minute to clear my sinuses or go into a coughing fit, I ask that you provide me leeway.
MR. SCHWINDT: Okay.
MR. LONG: I've got a glass of water. I may have to go to it from time to time.
Good morning. Once again, my name is Richard Long, and I'm the director of EPA's air and

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radiation program for Region 8. I appreciate the opportunity to make this statement at your public hearing and ask that my statement be included in the hearing transcript of today's proceedings.

First, I would like to provide some background information and EPA's overview on how we've gotten to where we are today.

In October 1999, the State of North Dakota submitted a comprehensive modeling analysis of SO2 increment consumption, using the approved Calpuff model, for several Class I areas and it completed -- that it completed in conjunction with a permit application by the Minnkota Power Cooperative to increase production and, consequently, SO2 emissions at its Milton R. Young coal-fired power plant near Beulah, North Dakota. The State conducted modeling for compliance with the Class I increment at all three units of Theodore Roosevelt National Park and Lostwood Wilderness Area, as well as the Medicine Lake Wilderness Area in Montana and the Fort Peck Indian Reservation Class I area. The State followed EPA rules and guidelines in this modeling effort. The results showed numerous violations of the SO2 increment above the 24-hour and 3-hour averaging times in all four Class I

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areas, and Minnkota Power Cooperative's proposed increase in emissions would contribute significantly to those violations.

In February of 2000, EPA provided its review of North Dakota's modeling analysis. Specifically, we stated that the modeling methodology was technically sound and consistent with EPA's Guideline on Air Quality Models and the recommendations of the Interagency Workgroup on Air Quality Modeling for evaluating Class I area impacts.

In addition, we advised North Dakota that it should not issue the permit to Minnkota Power Cooperative to increase production without requiring emission reductions to ensure that there would be no violations of the PSD increments. We also advised the State to correct the existing SO2 increment violations.

In April of 2000, North Dakota notified Minnkota Power Cooperative that it would not proceed to issue a construction permit for the Milton R. Young Station based on the facility's application to increase production. North Dakota's denial was based in large part on the facility's impact on the existing Class I SO2 increment

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violations, as well as on projected violations of the SO2 National Ambient Air Quality Standards (or NAAQS) and the Class II increment in other areas.

The State then performed a subsequent Class I increment analysis under various scenarios. The scenario of most interest to EPA was the analysis of the original results excluding the increment-consuming emissions of the Minnkota Power Cooperative's Milton R. Young Station. The results continued to indicate numerous violations of the Class I increment in all four Class I areas.

In January of 2001, we met with the North Dakota Department of Health to discuss the potential need for a SIP provision to correct the PSD increment violations. The State indicated the need to update and refine their modeling analysis before moving forward with examining potential measures to adopt into the SIP. Consequently, in March -- consequently, in a March 13th, 2001, letter to EPA, the North Dakota Department of Health committed to update and refine its modeling analysis and to subsequently adopt revisions to its SIP as necessary to address an increment violation -- any increment violations shown by the revised

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modeling analysis.

Specifically, the North Dakota Department of Health agreed that it would:

First, develop an air quality modeling protocol by April 1st, 2001;

Complete its modeling analysis by January 2, 2002 (or within nine months from the time EPA completed its review of the modeling protocol);

Third, provide EPA with a summary of its modeling analysis by February 1, 2002;.

And, finally, complete a SIP revision to resolve the increment issues, if the modeling analysis showed that the increment was exceeded by August 1st, 2003.

In a letter dated March 28, 2001, we advised the State that in light of its commitment letter, we would not initiate formal action to call for a SIP revision to address these violations of the PSD increments for SO2. We acknowledged that the State wanted to refine the modeling analysis to better determine the appropriate control strategies to address the violations and we offered to work with the State in its efforts. We advised the State that if it did not meet its commitments or if the State and EPA couldn't agree on an acceptable